भारतीय मानक
Indian Standard

IS 2400 : 2022

बेसन — विशिष्टि

(दूसरा पुनरीक्षण)

Besan — Specification

(Second Revision)

ICS 67.060

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भारतीय मानक ब्यूरो
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March 2022 **Price Group 3**

Foodgrains, Allied Products and Other Agricultural Produce Sectional Committee, FAD 16

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food grains, Allied Products and Other Agricultural Produce Sectional Committee had been approved by the Food and Agriculture Division Council.

Besan (Bengal Gram flour) is used extensively in India for preparing certain savoury and sweet dishes.

This standard was first issued in 1963 and subsequently revised in 1976 to modify the requirements of moisture, total ash and acid insoluble ash; delete the requirement for alcoholic acidity; and include requirement and method of test for freedom from *khesari dal* (*Lathyrus sativus*). The current revision has been taken up to harmonize the requirements of *besan* with the specifications laid down in *Food Safety and Standards* (*Food Products Standards and Food Additives*) *Regulation*, 2011 and *Besan* (*Gram Flour*) *Grading and Marking Rules*, 1975. Following changes have been incorporated in the current revision:

a) requirements for Grade I and Grade II of *besan* have been introduced, separately;
b) specifications of alcoholic acidity, uric acid and crude fibre have been included; and
c) test method for absence of metanil yellow has been prescribed.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006 and the Rules and Regulations framed thereunder and the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011. However, this standard is subject to the restrictions imposed under these, wherever applicable.

The composition of the Committee responsible for formulation of the standard is given in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

BESAN — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for *Besan*.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

IS No	*Title*
460 (Part 1) : 2020	Test sieves: Part 1 Wire cloth test sieves (*fourth revision*)
1009 : 2022	*Maida* — Specification (*third revision*)
1070 : 1992	Reagent grade water — Specification (*third revision*)
1158:1973	Specification for corn flakes (*first revision*)
2491:2013	Food hygiene — General principles — Code of practice (*third revision*)
4333 (Part 5) : 1970	Methods of analysis for foodgrains: Part 5 Determination of uric acid
7219 : 1973	Method for determination of protein in foods and feeds
14818 : 2017/ ISO 24333 : 2009	Cereal and cereal products — Sampling (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, *Besan* shall mean the product obtained by milling sound clean and dried decuticled Bengal gram (*Cicer arietinum)* only.

4 REQUIREMENTS

4.1 Description

Besan shall be in the form of a free flowing flour, yellowish in colour and shall possess the characteristic taste and smell. The material shall be free from insect and fungus infestation, rodent contamination and other extraneous matter. The material shall be free from added colouring matter.

4.2 *Besan* shall be free from contamination with *khesari dal* (*Lathyrus sativus*) and metanil yellow when tested according to the method prescribed in Annex A and Annex B respectively.

4.3 *Besan* shall be marked as 'Fine' when 99.3 percent of it passes through 500 micron IS Sieve [*see* IS 460 (Part 1)] and as 'Coarse' when 98 percent passes through 1 000 micron IS sieve [*see* IS 460 (Part 1)].

4.4 Microscopic Appearance

Besan when subjected to microscopic examination shall exhibit the characteristic appearance as shown in photomicrograph reproduced in Fig. 1.

4.5 *Besan* shall be in sound merchantable condition and fit for human consumption in all respects.

4.6 *Besan* shall be manufactured in premises maintained under hygienic conditions (*see* IS 2491).

4.7 Pesticides/insecticides residues, toxic metals, naturally occurring toxic substances and other contaminants (if any) in the product shall not exceed the limit as prescribed in the *Food Safety and Standards* (*Contaminants, Toxins and Residues*) *Regulations*, 2011.

4.8 In addition to the above, *Besan* shall be of two grades namely, Grade I and Grade II conforming to the requirements specified in Table 1.

5 PACKING AND MARKING

5.1 *Besan* shall be packed in new, clean, sound, and dry jute bags, cloth bags, laminated polyethylene, polypropylene, high density polyethylene bags, pouches or any other packing material of food grade, which shall be free from insect infestation, fungus contamination, deleterious substances and undesirable or obnoxious smell. Each package shall be securely closed and sealed. Suitable number of consumer packs containing graded material of the same grade designation and from the same lot/batch may be packed in a master container, such as wooden cases, card board cartons etc.

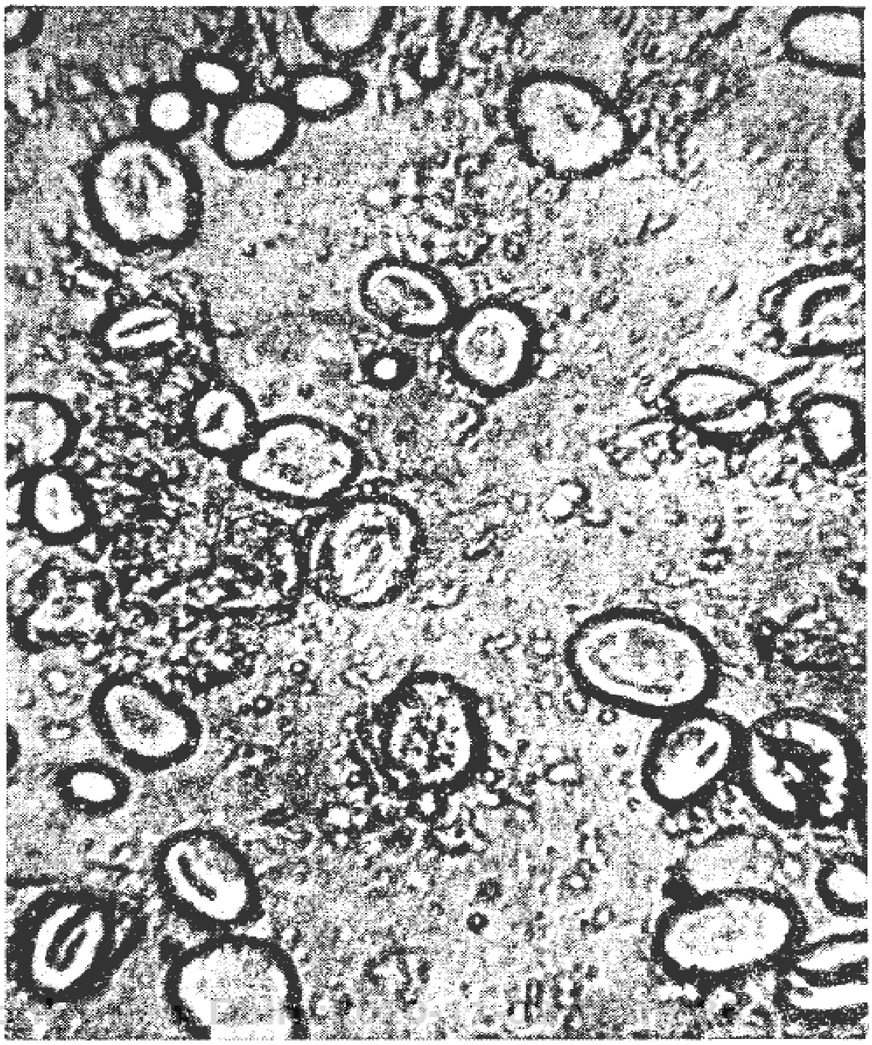

FIG. 1 PHOTOMICROGRAPH OF *BESAN*

Table 1 Requirements for *Besan*

(*Clause* 4.8)

Sl No.	Characteristic	Requirement		Method of Test, Ref To
		Grade I	**Grade II**	
(1)	(2)	(3)	(4)	(5)
i)	Moisture percent by mass, *Max*	11.5	12.0	Annex A of IS 1009
ii)	Total ash (on dry basis), percent by mass, *Max*	3.0	3.5	Annex B of IS 1009
iii)	Acid insoluble ash (on dry basis), percent by mass, *Max*	0.25	0.3	Annex C of IS 1009
iv)	Alcoholic acidity (as H_2SO_4), with 90 percent alcohol, percent by mass, *Max*	0.12	0.18	Annex E of IS 1009
v)	Crude protein (on dry basis), percent by mass, *Min*	21.0	21.0	IS 7219
vi)	Uric acid (on dry basis), mg/kg, *Max*	100	100	IS 4333 (Part 5)
vii)	Crude fibre, (on dry basis), *Max*	4.5	5.0	Annex D of IS 1158

5.2 The product shall be packed in quantities as stipulated under the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011 as well as in accordance with requirements under the *Food Safety and Standards Act*, 2006 and the Rules framed thereunder**.**

6 MARKING

6.1 The ink used for marking shall be of such quality which may not contaminate the product. Each container shall be suitably marked as to give the following information:

a) Grade designation;
b) Name and address of the packer/manufacturer;
c) Date of packing;
d) Lot/batch number;
e) Net quantity;
f) Best before……..month…….year; and
g) Any other information required under the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011, *Food Safety and Standards* (*Labelling and Display*) *Regulations,* 2020.

6.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

7 SAMPLING

Representative samples of the material for ascertaining conformity to the requirements of this standard shall be drawn according to the method given in IS 14818.

8 TESTS

8.1 All the tests shall be carried out as specified in **4.2**, **4.3** and *col* 5 of Table 1.

8.2 Quality of Reagents

Unless specified otherwise, pure chemicals shall be employed in tests and distilled water (*see* IS 1070) shall be used where the use of water as reagent is intended.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

ANNEX A

(*Clause* 4.2)

DETECTION OF PRESENCE OF LATHYRUS SATIVUS IN *BESAN*

A-0 PRINCIPLE

Seeds of *khesari dal (Lathyrus sativus)* contain an unusual amino acid {ß-N-oxalyl-amino-L alanine (BOAA)} which is not present in the seeds of other legumes. This amino acid is identified through an aminogram. Extracts of the material prepared in ethanol are irrigated in phenol-water solution, the amino acid moves and it appears as distinct spot when the aminogram is sprayed with ninhydrin in acetone and developed by drying.

A-1 APPARATUS

A-1.1 Steam-Bath

A-1.2 Air-Oven

A-1.3 Chromatographic Paper, (Whatman No. 1 filter paper)

A-1.4 Haemoglobin Pipette

A-2 REAGENTS

A-2.1 Ethanol — 70 percent solution.

A-2.2 Isopropanol Solution — 10 percent.

A-2.3 Liquefied Distilled Phenol-Glass-Distilled Water (4 : 1) Solution

A-2.4 Ninhydrin Solution — 0.1 percent solution, in acetone or ethanol.

A-2.5 Buffer — Pyridine: acetic acid: water (0.5: 5: 95), *p*H 3.60.

A-3 PROCEDURE

A-3.1 Extraction

Weigh accurately one gram of the sample and extract it overnight with 100 ml of ethanol solution at room temperature. Filter the extract and evaporate to dryness on a steam-bath. Extract the residue with 10 ml of isopropanol solution, filter and use the solution for chromatography or paper electrophoresis.

A-3.2 Chromatographic Method

Spot 20 µl of the extract using a haemoglobin pipette in the centre of a Whatman No. 1 filter paper and keep it wet overnight in a phenol-water solution. Remove the solvent from the paper by drying it in a current of air at room temperature for 4-5 h. Spray the chromatogram with ninhydrin solution and develop colour by heating in a hot-air oven at 100 °C for five minutes. The appearance of a bluish purple spot is characteristic for aminograms of *L. sativus.*

A-3.3 Paper Electrophoresis Method

Spot 20 µl of the, extract in the centre of a Whatman No. 1 filter paper of a suitable size subject to horizontal or vertical ionophoresis in a buffer for 3 h at a potential of 8 V/cm. Dry the paper for 10 min at 100 °C. Spray the aminogram with ninhydrin and develop as described in **A-3.2**.

ANNEX B

(*Clause* 4.2)

DETECTION OF METANIL YELLOW IN *BESAN*

B-1 APPARATUS

B-1.1 Pasteur pipettes/Dropper

B-2 REAGENT

B-2.1 Concentrated HCl

B-3 PROCEDURE

Take one gram *besan* in a test tube. Add 5 ml of water to it. Add a few drops of concentrated hydrochloric acid (HCl). Observe any change in colour. The appearance of a pinkish red colour shows the presence of metanil yellow.

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Foodgrains, Allied Products and Other Agricultural Produce Sectional Committee, FAD 16

Organization	*Representative(s)*
Directorate of Marketing and Inspection, Ministry of Agriculture, New Delhi	Shri P. K. Swain (***Chairman***) Additional Secretary (Agriculture Marketing),
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Centre of Excellence for Soybean Processing, CIAE, Bhopal	Dr Punit Chandra Dr S. K. Giri (*Alternate*)
Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana	Head (Division of Transfer of Technology) Dr D. N. Yadav (*Alternate*)
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Directorate of Plant Protection Quarantine and Storage, Faridabad	Plant Protection Adviser Shri R. V. Singh (*Alternate*)
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SCIENTIST 'B' (FAD), BIS

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Amendments Issued Since Publication

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